



CONSERVATION STRATEGIES TO ACHIEVE LANDSCAPE –LEVEL CONSERVATION IN THE ARID WEST

Aridlands Grazing Network, Workshop 2
Boise, Idaho
November 14–16, 2001

TNC's Mission Statement

The mission of The Nature Conservancy is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive.

Conservation Vision

The Nature Conservancy's vision is to conserve portfolios of functional conservation areas within and across ecoregions. Through this portfolio approach, we will work with partners to conserve a full array of ecological systems and viable native species.

Cover photo: Medano Zapata Ranch, by Ron Semrod

Copies of this summary are available on the Landscape Conservation Network
Web Site:

<http://tnc-ecomangement.org>

Or contact:

Bob Unnasch
Monitoring and Adaptive Management Program
1109 Main Street, #333
Boise, ID 83702
208-343-8826; bunnasch@tnc.org

EXECUTIVE SUMMARY

Landscape Conservation Networks (LCNs) are catalyzing the development and implementation of innovative biodiversity conservation strategies at hundreds of landscapes across the U.S. and internationally. The networks, also called “learning networks,” bring together Nature Conservancy field staff, partners, and experts in a progressive series of facilitated workshops. Each network typically begins with discussions related to conservation targets and the scientific foundation of management. Over time, the group’s focus shifts to threats, appropriately scaled threat-abatement strategies, and monitoring and adaptive management.

The objectives of the Aridlands Grazing Network are to strengthen the scientific foundation for grazing management in the landscapes participating in the network, and to develop and advance strategies to promote biodiversity health and abate threats at landscapes across the Arid West.

The second Aridlands Grazing Network workshop was held 14–16 November, 2001, in Boise, Idaho. Over the course of the three-day meeting, eight key lessons emerged.

Grazing is one of many conservation management tools. It is helpful to think about grazing as no more than one of a set of land management tools that can be used to accomplish specific objectives. The usefulness of grazing as a tool varies widely over space and time.

Working at multiple scales requires multiple, interrelated solutions. The concept of spatially nested strategies is useful in understanding how our work at different spatial scales is interrelated. Often work at smaller scales supports and informs larger-scale strategies.

Spatially explicit biodiversity health objectives can help us understand the scales at which strategies will operate. This includes clearly defining the spatial extent of the largest area we want to influence. Skipping this important step can hamper the development of appropriate threat abatement strategies.

Have contingency plans. Conservation practitioners can learn this lesson from seasoned ranchers—develop and be ready to implement Plan B. Our assumptions can turn out to be incorrect, and markets and environmental conditions can and will change unpredictably. Well-crafted contingency plans will help us and our conservation targets weather uncertainty.

Incorporate social and economic drivers into planning efforts. Oftentimes the success of the strategies we devise are just as dependent upon social and economic conditions as they are on biological factors. As a result, we need to develop and test hypotheses related to these variables, and learn how to incorporate socioeconomic factors into our ecological models and other planning tools.

Developing a shared “desired future condition” helps build partnerships. Partnerships are built upon common ground; developing a shared vision for the future is an effective way to cut through differences and identify what is important to everyone.

The ownership and management of land is the core of all successful multi-scale and multiple partner strategies. Owning and managing land give the Conservancy both credibility (“a seat at the table”) and learning opportunities that cannot be gained in other ways. Both are necessary if we are to influence lands that others own.

Don’t be seduced by first-order impacts. We must carefully predict and weigh the consequences of our actions at multiple spatial and temporal scales in order to choose appropriate strategies. If we don’t, our actions can have unintended negative consequences.

FOREWORD

The concept of learning networks within The Nature Conservancy has evolved and is continuing to change along with the organization. What has remained constant is the networks' commitment to (1) supporting and accelerating on-the-ground biodiversity conservation work, and (2) advancing how we as an organization are tackling specific threats or applying certain overarching strategies, to achieve lasting, global conservation. Networks are also testing grounds for new tools and concepts, and in many cases they have helped diverse sets of partners find common ground.

The networks bring together site-based practitioners, partners, and scientific experts who deal with similar landscape-scale threats such as fire suppression, invasive species, or incompatible forestry practices. Each network consists of 15 to 35 landscape-scale sites, and is structured around a series of workshops held over a period of 18 to 24 months. Each workshop lasts approximately three days and consists of presentations by Conservancy and external scientific experts, work group sessions, and intensive peer review of products created by the focal and participating landscapes (e.g., conceptual ecological models or monitoring plans). Networks are led by veteran conservation practitioners. When possible, workshops incorporate field trips to sites that are actively involved in a given network.

The Aridlands Grazing Network, launched in April 2001, provides a forum and ongoing support for the

development and implementation of conservation strategies in the context of aridland ranching. There are currently five other Landscape Conservation Networks addressing wetland management, the management of invasive species in the eastern U.S., and the conservation of fire-adapted and fire-influenced ecosystems in (1) the U.S., (2) Mexico, and (3) the Caribbean and Central America.

For more information on the Aridlands Grazing Network, contact Bob Unnasch (bunnasch@tnc.org) or Wendy Fulks (wfulks@tnc.org).



Field trips are an important component of learning network workshops. Photo by Tim Whittier.

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INTRODUCTION

The Nature Conservancy (TNC) is directly or indirectly involved in livestock production at more than 25 sites in the American West. The Aridlands Grazing Network was developed to promote the understanding of key landscape-scale conservation strategies where livestock grazing may be an important component for advancing conservation goals.

The network consists of a group of Conservancy site-based practitioners and scientists, private ranchers, and scientists and other experts from outside TNC who attend a series of facilitated workshops. The overall network was specifically designed to make tangible progress toward understanding the role of grazing at four high-priority functional landscapes (“focal” landscapes), while leveraging critical learning and best practices to 30 to 35 additional priority landscapes (“participating” landscapes) managed by The Nature Conservancy and its public and private partners.

The focal landscapes are Zumwalt Prairie in Oregon, Owyhee Canyonlands in southwest Idaho, the Great Sand Dunes Ecosystem in Colorado, and the Headwaters Ranch area in New Mexico (which includes portions of both the Mimbres River and Gila River conservation areas). These four landscapes were selected to represent both the diversity of landscape types found in the Arid West and the broad range of issues associated with conservation in this region.

Five workshops over two years will:

1. Facilitate communication and cross-site learning among Conservancy practitioners, ranching partners, and external scientific experts;

2. Develop ecological management objectives that explicitly integrate target viability within the framework of ranching operations;
3. Promote the implementation of key strategies that include adaptive ecological management, restoration, and compatible economic development;
4. Develop multi-scale monitoring and assessment methods;
5. Help practitioners integrate weed management strategies into management plans; and
6. Develop and disseminate best practices, including recommendations for prescriptive conservation easements.

The network is coordinated and facilitated by Robert Unnasch (bunnasch@tnc.org).

Goals and Objectives of Workshop #2

The primary objective of the second workshop of the Aridlands Grazing Network was to continue to build upon the lessons learned from the first workshop by examining the diversity of **conservation strategies** being implemented by each of the four focal landscapes. We wanted to focus the considerable experience, knowledge, and enthusiasm of this group to develop promising strategies to restore and maintain biodiversity health at multiple spatial scales and across multiple portfolio conservation areas in the Arid West.

Conservation practitioners in the Arid West have many landscape-scale strategies to draw upon; grassbanking, prescribed fire, and grazing are just a few of the general strategies that managers can implement to maintain or restore biodiversity health to their ecological systems. Additional strategies (e.g., passing state legislation) are

needed at larger scales, such as ecoregions, and to address the conservation needs of multiple portfolio areas.

We asked each of the focal landscapes to consider the following and present their findings to the group:

- ◆ Describe and map both the current conditions and the desired future condition for your system;
- ◆ Identify the stresses¹ and sources² affecting your system's key ecological factors³;
- ◆ Identify those strategies you believe will effectively abate these threats; and
- ◆ Demonstrate, through your ecological model, how these actions will move the system toward the desired future condition.

Additional objectives were to maintain and foster an informal network of western aridland management practitioners both within and outside the Conservancy; inform senior scientists on the current status of, and tools and information needed for, landscape-scale aridland management; and provide participants with a forum for interaction with a diversity of Conservancy staff, outside experts, and partners.

Forty-one people participated in the workshop (see Appendix A), including site based practitioners, partners, and scientific experts from the Conservancy, government agencies and other non-profit organizations. In all, 35 conservation areas located in 11 western states have been involved in the network (see Figure 1).

¹ "Stresses" are defined as the most serious types of destruction or degradation affecting the conservation targets or ecological processes.

² "Sources" of stress are the causes or agents of destruction or degradation.

³ "Key ecological factors" include critical patterns of biological structure and composition (key system states); and critical ecological processes, environmental regimes, and other environmental constraints that "drive" or give shape to these patterns and their natural variation over space and time (key system dynamics). A conservation target has integrity when all of its key ecological factors remain intact and functioning within their natural ranges of variation.

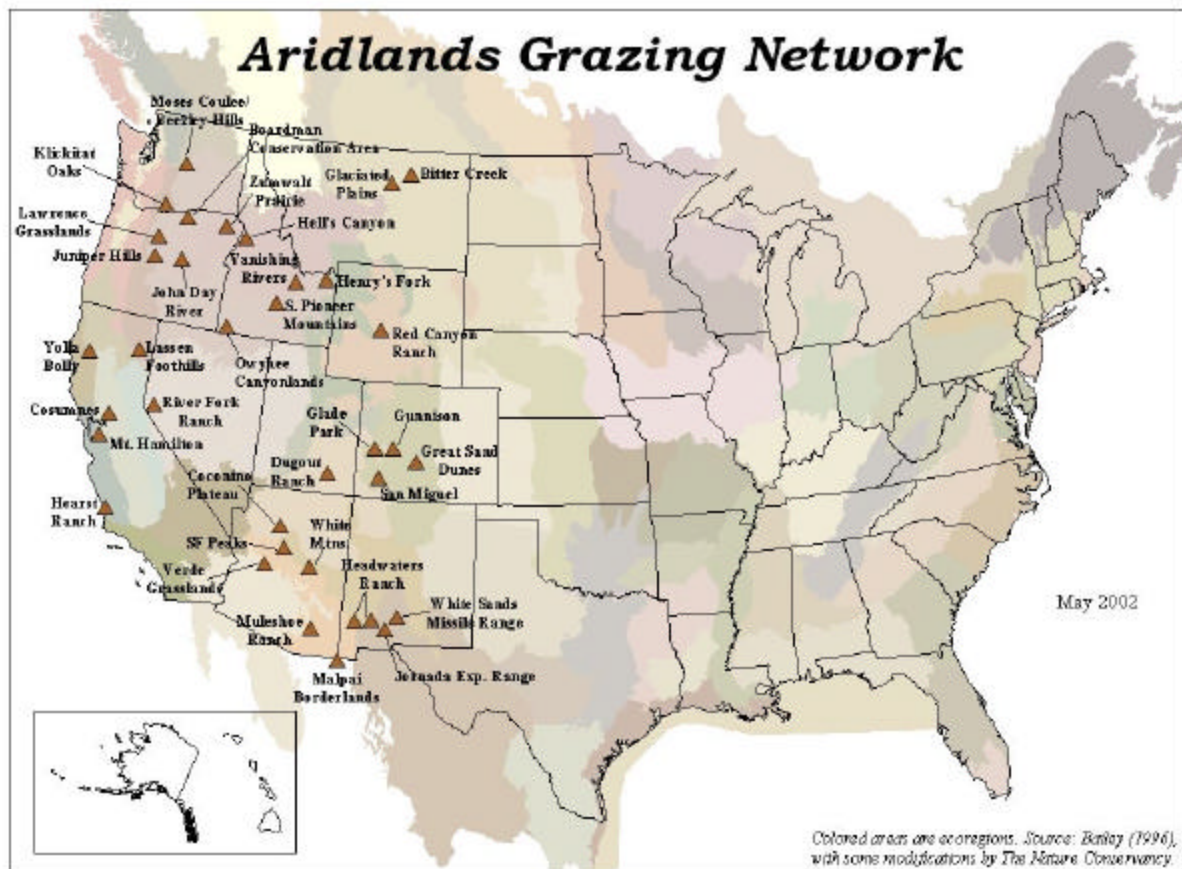


Figure 1. Landscapes represented at Aridlands Grazing Network workshops.

OVERVIEW OF CONCEPTS AND ISSUES: PLENARY PRESENTATIONS

Grazing as a Tool for Managing Exotic Species

Karen Launchbaugh, Ph.D.
University of Idaho

Grazing can have a profound positive or negative effect on the spread of weeds. It has been well documented that *uncontrolled grazing* has increased the spread of weeds via disturbance, transport of seeds, and reduced competition from native plants. However, carefully *controlled grazing* can be used to reduce weeds in crop systems, control herbaceous biomass in tree crops, remove weeds in waste places, and control weeds on rangelands. This carefully managed use of grazing is often termed “prescription grazing.” Table 1 summarizes some of the pros and cons of using prescription grazing instead of herbicides to control rangeland weeds.

Successful prescription grazing relies on good timing and selection of the correct species/breed of grazer. Once these decisions have been made the manager then needs to determine how often to graze and

the desired level of defoliation (stocking rate). Timing of grazing is important; for example, grazing should occur when weeds are most susceptible and relatively palatable or when the desired species are least palatable or least susceptible. Palatability of plants is often very different for different species and breeds of grazing animals, so it’s important to choose the most appropriate grazer.

The three most popular grazers are cattle, sheep, and goats. Generally, **cattle** are grass eaters with large, strong mouths, have large rumens for fermentation, are well designed for fiber digestion, can be used to trample vegetation, and are easy to contain and sell. **Sheep** are grass and forb eaters with small selective mouths, large rumens for fermentation, and large livers for detoxification. Sheep are also easy to market; however, they require fencing or a herder. **Goats** are forb and woody plant eaters with small selective mouths. Like sheep, they have large livers for detoxification and they require fencing or a herder for control. Unlike sheep, goats have a poorly established sales market.

Selection of the correct livestock species depends on the weed species of interest, the terrain, handling equipment and fencing, and the livestock management skills and philosophy of the manager. It is important to note that in many cases animals can be bred or trained to be more effective weed control agents.

Table 1. Some pros and cons of prescriptive grazing (vs. herbicide use) as a weed control strategy.

Cons	Pros
<ul style="list-style-type: none"> ♦ Cost of animals ♦ Difficulties finding appropriate animals ♦ Fencing, water, herders, trailers ♦ Reduced animal production ♦ Damage to non-target plant species ♦ Spread of weed seed in feces, wool, hair, or hooves ♦ May be incompatible with wildlife 	<ul style="list-style-type: none"> ♦ Can be more effective than herbicides ♦ Improved pasture quality ♦ No pesticide residue (environmentally friendly) ♦ Lower effect on non-target species ♦ Convert weeds into saleable product ♦ More sustainable control ♦ Feasible in rough terrain

Prescription grazing is often most valuable as part of an integrated weed management program. For example, for several weedy species, grazing animals have been shown to (1) increase the effects of herbicides by reducing the root mass, (2) improve the efficacy of biocontrol agents by reducing root or seed production, and (3) plant seeds and control weeds during revegetation.

Grazing as a Tool for Protecting Biodiversity

Linda Hardesty, Ph.D.
Washington State University

In the Arid West grazing is often used for ecological purposes for such things as weed control and fuel reduction. However, our knowledge of grazing is incomplete and it is important to remember that both grazing and biodiversity have random components. In some cases grazing may be an effective tool for management but it is always time- and site-specific.

We know the following about grazing:

- ◆ Grazing is neither good nor bad;
- ◆ Grazing is not a simple process;
- ◆ We can manipulate succession with grazing;
- ◆ We can manipulate the structure of the system with grazing;
- ◆ Grazing can accelerate nutrient cycling; and
- ◆ We can manage grazing so that it is barely detectable, or hugely destructive.

It is important for managers to remember that the current status does not necessarily reflect current conditions; rather, the present state of a landscape might be a reflection of historical processes. In addition, because the appropriateness of grazing as a conservation strategy is always time- and site-specific, we need to treat grazing application as an experiment, complete with specific goals,

contingency plans, and monitoring plans. Contingency plans will allow the manager to take advantage of opportunities as they arise.

Cheatgrass, Livestock Management & Restoration in the Great Basin Desert

Mike Pellant, Ph.D.
Bureau of Land Management

The Great Basin is a 70-million-acre arid environment dominated by sagebrush steppe, salt desert shrub, and pinyon/juniper woodland plant communities. In the past 100 years much of the Great Basin has been severely degraded with a significant loss of the native herbaceous understory. This void has been filled by cheatgrass, *Bromus tectorum*. Cheatgrass is a pernicious, invasive, exotic species with densities up to 13,000 plants/m² and 17,000 seeds/m². Seeds are viable for up to five years. In addition, dead plants form a contiguous fuel base, and are flammable four to six weeks earlier and four to eight weeks later than natives. As a result, the fire return interval is now 10 years compared to 32 to 70 years historically.

Because cheatgrass is spreading in areas that are frequently used for cattle production, many people are advocating the use of livestock to manipulate the vegetation and mitigate the damage cheatgrass may cause. Three main livestock vegetation manipulation strategies have been proposed:

- ◆ Protection Approach – Use livestock to reduce fuels around priority areas;
- ◆ Passive Approach – Manage livestock to reduce undesirable plant competition and promote desired vegetation; and

- ◆ Active Approach – Apply grazing to reduce undesirable plant competition prior to reseeding.

In general, livestock effects on vegetation can be manipulated by changing the season of use, the intensity of use, the distribution, the duration of use, or the class of livestock. However, we must also be careful when using livestock that we do not introduce new weeds, compact the soil, destroy the biological crust, or lose native plants. Managers must develop strategies to mitigate these possible negative effects of livestock and monitor not only vascular plants but also biological crusts, soils, and other elements.

Examples of effective uses of livestock to manipulate vegetation include:

- ◆ Focusing livestock use along fire start areas such as roads;
- ◆ Using livestock in areas designated as wildland/urban interface;
- ◆ Using livestock on greenstrips; and
- ◆ “Flash grazing” cheatgrass in the spring to favor perennial bunchgrasses.

The ecological integrity of the Great Basin and other sage-steppe ecosystems is severely threatened. In August of 1999, in the space of about a week, almost 1.7 million acres of land in the Great Basin burned. Over a few days, a series of lightning storms ignited hundreds of rangeland and forest fires. While putting out the fires was a challenge, the more formidable problem was preventing much of the burned land from being overwhelmed by exotic annual grasses and noxious weeds.

Cheatgrass already dominates roughly one-third, or about 25 million acres of the Great Basin. Cheatgrass is a volatile fuel that carries fire quickly, and is the primary reason behind the Great Basin’s downward ecological spiral — the more cheatgrass and other annual weeds, the more fire. And the more fire, the more cheatgrass and other annual weeds.

Before the fires in the Great Basin were controlled, a team of specialists met in Boise, Idaho, to review the consequences of the big blazes of 1999. The team concluded:

- ◆ The Great Basin’s ecological resiliency is fading as annual grasses and noxious weeds increase their dominance.
- ◆ Traditional means of fighting invasive species and restoring native habitat are not enough to reverse the downward trend.
- ◆ A true effort to restore, and not merely rehabilitate, the burned areas was needed to resolve the serious ecological problems in the Great Basin.
- ◆ Such a restoration would be expensive, but the cost of doing nothing ultimately would be many times higher as non-native, invasive species dominate more land.
- ◆ Restoration won’t transform the Great Basin to its composition of 150 years ago. Rather, it would seek to restore some areas of high values, reduce the effects of annual grasses and noxious weeds in other areas, and reverse the destructive cycle of wildland fires and weeds.

In this working landscape the protection of high-quality areas, and the restoration of degraded sites must include a variety of strategies, including innovative grazing regimes that will reduce the accumulation of cheatgrass litter while minimizing damage to the biological crusts binding the soil surface.

Much is at stake in the Great Basin. Without a concerted, coordinated effort that relies heavily on local partnerships, the Great Basin could reach a point of no return, where the slide toward ecological disaster cannot be reversed.

PEER REVIEW OF THE FOCAL LANDSCAPES

A primary objective of the workshop was to provide in-depth peer review on the system-level management strategies developed for the four focal landscapes: the Zumwalt Prairie of Oregon, the Owyhee Canyonlands of Idaho, the Great Sand Dunes Ecosystem of Colorado, and the Headwaters Ranch of New Mexico (see Appendix B).

We asked peer reviewers to work with representatives of each landscape and:

1. Envision the **desired future condition** for the targeted system and define what success looks like. Identify the “flex-

points” in the targeted systems; these are the combination of ecological states and landscape sites that will be most responsive to conservation management.

2. Evaluate the proposed strategies to move from the current condition to the desired future condition. (Do these strategies link with the scientific work previously done?)
3. Verify that the strategies can work, and can be successful at the necessary temporal and spatial scales.

Several common themes emerged from the discussions; these are documented as “best practices” in the following section.



Conservation strategies under consideration at the Zumwalt Prairie, Oregon, include a mix of approaches such as grassbanking intended to minimize the impacts of grazing on the native prairie ecosystem. Photo by Ellen M. Bishop.

BEST PRACTICES AND LESSONS LEARNED

The plenary presentations and group discussions generated a number of important ideas related to livestock grazing, and developing multi-area conservation strategies.

Grazing is one of many conservation management tools; its utility will vary widely over time and space

Grazing can be considered one of many tools available to land managers. Grazing is not an all-purpose tool; however. The appropriateness of grazing is time- and site-specific, and dependent upon the desired outcome. Employing grazing animals in a specific way to control weeds, for example, is termed “prescription grazing.” Managers may also apply grazing to manipulate plant succession.

Karen Launchbaugh shared evidence that “flash grazing” utilizing sheep is an effective tool for controlling certain weeds, including leafy spurge and yellow star thistle in rangelands. Similarly, Mike Pellant suggested that early season grazing within green strips is an effective way of enhancing the subsequent fire-resistance of these areas.

Conservation practitioners who employ grazing should approach its use as an experiment, with well-defined, measurable goals and monitoring plans. And, as all ranchers know, contingency plans are necessary to survive and even exploit changing climates, markets, and other factors.

Spatially nested strategies: Working at multiple scales requires multiple, interrelated solutions

As we increase the geographic scope of our conservation work, we are learning that different strategies are needed for the various spatial scales we choose to work in, and that these strategies are often related. For example, at the scale of a 10,000-acre preserve or ranch we may employ conservation strategies such as improving grazing management, and controlling weeds. If we also want to protect biodiversity across a 5-million-acre area that includes the smaller preserve, we need new strategies. At the larger scale we may focus on raising money to establish a Weed Management Area and to create a regional Grassbank™, passing legislation, or increasing awareness about the important role of fire in a particular system. Often, the work at the smaller scale supports and informs the larger-scale strategies. Figure 2 illustrates this concept for Idaho’s 45-Ranch, Owyhee Borderland Trust, and Owyhee Initiative.

Establish clear, spatially explicit biodiversity health objectives to understand the impacts your strategies will have at various spatiotemporal scales

The Conservancy strives to employ tools or strategies at one scale that can be leveraged to conserve a much larger area. However, that larger area needs to be clearly defined if we are to understand what impacts our strategies will have across the landscape. A well-articulated, spatially explicit statement

of “desired future condition” can help managers come to grips with the size of the area they are trying to influence and develop realistic biodiversity health objectives. Such a statement will help managers deal with the fact that actions can have net negative impacts at one spatiotemporal scale and net positive impacts at other scales. These statements can also help educate and energize partners and other stakeholders.

Staff used spatial data from a variety of sources to develop detailed maps of the Headwaters Ranch conservation area depicting current vegetation, current and potential management actions, and desired future condition by the year 2100. Figure 3 illustrates changes in vegetation and improved hydrologic condition, all of which managers hope to achieve in the next 100 years through new grazing and fire management treatments, sediment trap construction, and selective tree thinning.

Have contingency plans

The majority of men meet with failure because of their lack of persistence in creating new plans to take the place of those which fail.

—Napoleon Hill

The strategies we choose to pursue are based on our limited understanding of the ecology and the sociology of the landscape. It is the nature of optimists—and conservationists are all optimists—to believe that what they are doing will have a positive impact. And yet, more often than not, our assumptions or our predictions prove wrong and we are forced to reconsider our actions. Doing so is the key to adaptive management. Anticipating the need to change, and planning for it is actively managing the future.

Incorporate social and economic drivers into our planning efforts

Oftentimes the success of the strategies we devise are just as dependent upon social and economic conditions as they are on biological factors. In particular, our need to effect change over enormous areas necessitates that we employ strategies with an economic component; otherwise they won't be feasible. TNC is less restricted by many of the day-to-day financial concerns

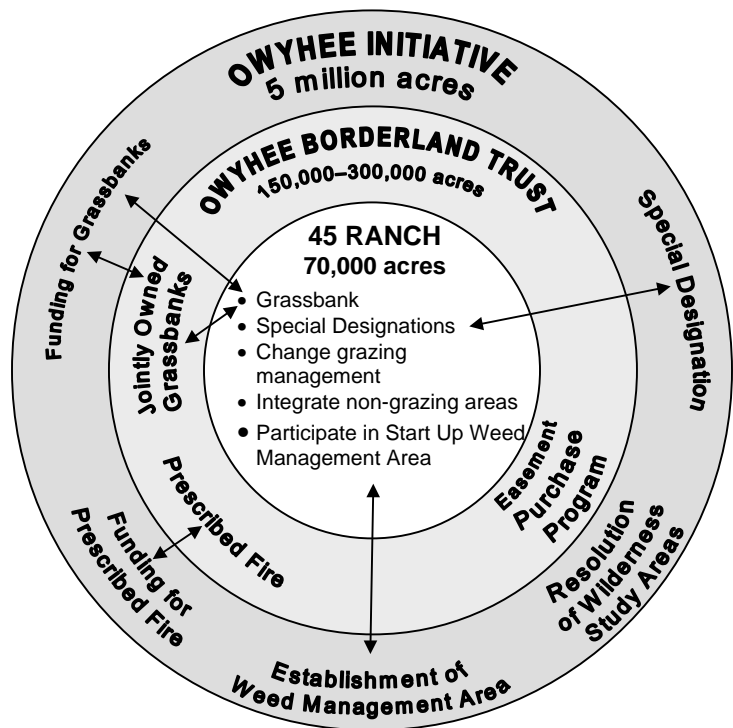


Figure 2. Spatially nested strategies. In Idaho the Conservancy is pursuing multiple, often interrelated strategies to effect conservation at three different spatial scales represented by the 45 Ranch, the Owyhee Borderland Trust, and the Owyhee Initiative. Concentric circles represent areas of increasing size; double-headed arrows connect interrelated strategies applied at different scales.

that our neighbors labor under. Because of this, we have greater freedom to experiment with a variety of grazing and land management techniques. However, because we hope that the successful techniques we develop are adopted by others, we must incorporate assumptions about social and economic factors into our planning, and they should be tested, just as biological and ecological assumptions are.

The Headwaters Ranch strategy, in part, has been to use the ranch as a laboratory to develop and test management regimes that are simultaneously economically feasible and facilitate the restoration of the grassland ecosystem. TNC is exploring opportunities to develop uses for small-diameter timber to create a market for juniper. The goal is to produce an incentive for local people to harvest the alligator junipers encroaching the grasslands. If successful, this will facilitate restoration across the entire conservation area.

Developing a shared desired future condition for the system and the site is a powerful partnership building strategy

An effective way to engage disparate partners is to focus early discussions on “What we want this place to be like in 20 to 30 years.” These initial discussions break down barriers and help to identify common ground. Eventually, this shared vision can be carried through to continually motivate partners and to create a shared language of conservation and land management.

The Conservancy’s team at the Medano-Zapata Ranch (part of the Great Sand Dunes Ecosystem) has been working closely with the National Park Service, the Colorado Department of Fish and Game, and

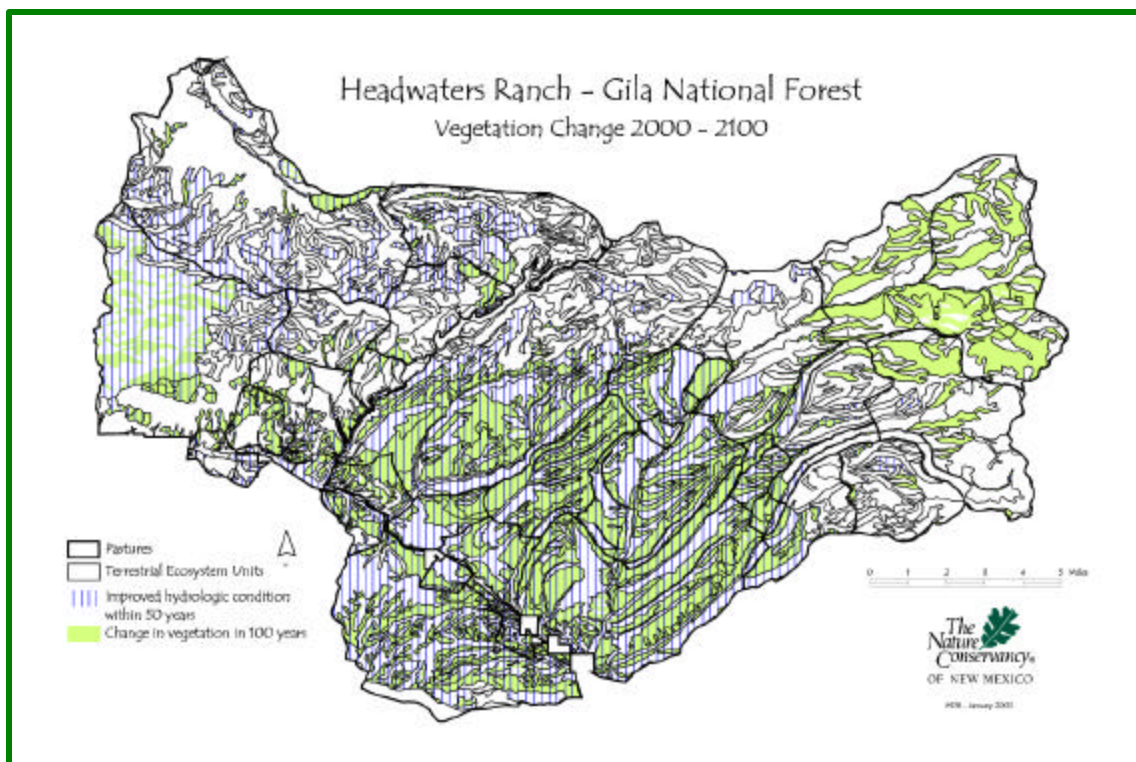


Figure 3. Spatial modeling allowed the Headwaters Ranch team to predict the results of their conservation strategies 100 years after implementation. Shown here are areas of vegetation change (green) and improved hydrologic condition (blue vertical lines).

surrounding landowners to develop a consensus vision of the upper San Luis Valley. By sharing its perspective on conservation targets, and the ecological models that have been developed for those targets, TNC has structured an open dialogue about the biodiversity values in the valley and how to work together to protect them.

The ownership and management of land is the core of all successful multi-scale and multiple partner strategies

Representatives from each of the focal sites have emphasized the importance of “being there” as the key to opening doors to the local community. Land ownership is a tangible commitment to the community and a desire to learn about community values. Our ownership of ranches has in many places set TNC apart from “outside environmentalists” and has enabled our site-based staff to affect lands that they could not hope to influence any other way.

Owyhee County, Idaho, has been a hotspot of anti-environmental sentiment for decades, and yet TNC has been invited to be an active participant in scoping out the future of the county and its people. Trish Klahr believes that the turning point for TNC was our commitment to the 45 Ranch. Our ownership of the ranch brought us the local credibility that enabled TNC to work with local partners to create the Owyhee Borderland Trust. The Borderland Trust was

the seed of the Owyhee Initiative, and the sphere of impact is continuing to grow.

Don't be seduced by first-order impacts

Ecological systems are both complex and complicated and we need to look beyond the simple first order connections. Failure to do so can result in mis-spent resources or in our actions creating problems larger than we had originally tried to fix.

An example of the need to identify the secondary as well as primary impacts of our actions is the reintroduction of fire to control juniper encroachment in the Great Basin. It is thought that historically, periodic fire was the key factor in preventing the expansion of juniper in these systems, and there is a strong desire among some to reintroduce fire into these systems. However, it is very likely that with the introduction of cheatgrass into these communities a prescribed fire may result in a cheatgrass monoculture rather than a healthy sage / scrub community.

Similarly, juniper encroachment is a pressing conservation concern at the Headwaters Ranch. Again, it is thought that prescribed fire would control this expansion. However, there is some evidence that the blue gramma grasslands that were dominant one or two centuries ago—and are believed by many to be the desired state—may have been an artifact of a wetter climate and may not be attainable under current climatic conditions. Reintroduction of fire may be the worst possible action now.

CONTACTS AND OTHER RESOURCES

For more information about this workshop
and the Aridlands Grazing Network contact:

Bob Unnasch
Ecological Monitoring and Adaptive
Management Program
1109 Main Street #333
Boise ID 83702
(208) 343-8826 ext. 14
bunnasch@tnc.org

For detailed information about the first
workshop of the Aridlands Grazing
Network held 11–13 April, 2001, at the
Medano-Zapata Ranch in Colorado or to
learn more about aridland management
activities at Conservancy and partner sites,
visit our Web site at [http://www.tnc-
ecomanagement.org/aridlands/](http://www.tnc-ecomanagement.org/aridlands/);
subscribe to TNC's aridlands grazing
listserve by contacting Chris Wilson at
christa_wilson@tnc.org; or consult the
participant list in Appendix A.

APPENDIX A

Aridlands Grazing Network Participant List

(* = Address / position has changed and no longer affiliated with network;
1 = Attended Workshop #1; 2 = Attended Workshop #2)

Sue Bellagamba¹

The Nature Conservancy
PO Box 1329
59 E Center Street
Moab, UT 84532-1329
435-259-4629
sbellagamba@tnc.org
Site: Dugout Ranch/Canyonlands

Jayne Belnap^{1,2}

USGS
2290 S Resource Blvd.
Moab, UT 84532
435-719-2333
jayne_belnap@nps.gov

Bruce Boggs¹

The Nature Conservancy
Center for Compatible Economic Development
7 East Market Street
Leesburg, VA 20176
703-779-1728
bboggs@tnc.org

Tom Bragg¹

The Nature Conservancy
19677 Lane 6 North
Mosca, CO 81146
719-378-2503
tbragg@tnc.org
Site: Medano-Zapata Ranch

Bob Budd¹

The Nature Conservancy
Red Canyon Ranch
350 Red Canyon Road
Lander, WY 82520
307-332-3388
bbudd@wyoming.com
Site: Red Canyon Ranch &
Lower Winchester Ranch

Steven Buttrick^{1,2}

The Nature Conservancy
821 SE 14th
Portland, OR 97214
503-230-1221
sbuttrick@tnc.org
Site: Zumwalt Prairie

Charles Curtin^{1,2}

Arid Lands Project
Box 29
Animas, NM 88020
207-767-4211
ccurtin@earthlink.net
Site: Aridlands Project & Gray Ranch

Peter Dunwiddie^{1,2}

The Nature Conservancy
217 Pine Street #1100
Seattle, WA 98101
206-343-4344
pdunwiddie@tnc.org
Site: Klickitat Oaks Preserve & Moses Coulee

Jeff Fields²

The Nature Conservancy
HC 85 Box 6
Bates, OR 97817
541-421-3037
jfields@tnc.org

Wendy Fulks^{1,2}

The Nature Conservancy
Learning Networks Group
2060 Broadway, Suite 230
Boulder, CO 80302
303-541-0355
wfulks@tnc.org

Mark Gershman*,²

The Nature Conservancy
Conservation Planning
2060 Broadway #230
Boulder, CO 80304
303-541-0322
mgershman@tnc.org

Mike Gibson¹

The Nature Conservancy
19677 Lane 6 North
Mosca, CO 81146
719-378-2503
mgibson@tnc.org
Site: San Luis Valley

Elizabeth Gray¹

The Nature Conservancy
201 Mission St, 4th Floor
San Francisco, CA 94105
415-777-0487
egray@tnc.org
Site: Mount Hamilton

Jeff Hardesty¹

The Nature Conservancy
Southeast Division
Department of Botany
PO Box 118526
Gainesville, FL 32611
352-392-7006
jhardesty@tnc.org

Linda Hardesty²

Dept of Natural Resources Sciences
Washington State University

Johnson Hall
Pullman, WA 99164
509-335-2980
lhardest@mail.wsu.edu

Jeff Herrick²
Jornada Experimental Range
MSC 3JER
NMSU Box 30003
Las Cruces, NM 88003-8003
505-646-5194
jherrick@nmsu.edu
Site: Jornada Experimental Range

Graciella Hinshaw*,¹
The Nature Conservancy
19677 Lane 6 North
Mosca, CO 81146
719-378-2503
mhinshaw@tnc.org
Site: San Luis Valley

Lonnie Hutes²
BLM
1387 S Vinnell Way
Boise, ID 83709
208-384-3397
lhutes@fmtc.com

Trish Klahr^{1,2}
The Nature Conservancy
PO Box 165
Sun Valley, ID 83353
208-726-3007
tklahr@tnc.org
Site: Owyhee Canyonlands

Teri Knight*,¹
The Nature Conservancy
1771 E Flamingo Road Suite 111B
Las Vegas, NV 89119
702-737-8744
tknight@tnc.org
Site: River Fork Ranch & Carson Valley Project

Rick Knight¹
Department of Fish and Wildlife Biology
233-JVK Wager
Fort Collins, CO 80523
970-491-6714
knight@cnr.colostate.edu

Karen Launchbaugh²
University of Idaho
Rangeland Ecology & Management
Moscow, ID 83844-1135
208-885-4394
klaunchb@uidaho.edu

Lou Lunte^{1,2}
The Nature Conservancy
1109 Main Street #333
Boise, ID 83702
208-343-8826
llunte@tnc.org
Site: Owyhee Canyonlands

Barry Rice²
The Nature Conservancy
Invasives Program
124 Robbins Hall

Dept of Crops and Weeds
Davis, CA 95616
530-754-8890
bazza@ucdavis.edu

Patrick McCarthy^{1,2}
The Nature Conservancy
212 E Marcy Street
Santa Fe, NM 87505
505-988-1542
pmccarthy@tnc.org
Site: Headwaters Ranch

Joey Milan²
BLM
4574 Jewell Street
Boise, ID 83705
208-384-3397
josephmilan@hotmail.com

Mike Pellant²
BLM
1387 S Vinnell Way
Boise, ID 83709
208-373-3823
mike_pellant@blm.gov

Linda Poole²
The Nature Conservancy
Matador Ranch
HC 63 Box 5032
Dodson, MT 59524
406-443-0303
lpoole@ttc-cmc.net
Site: Matador Ranch & Pine Butte Swamp

Louis Provencher^{1,2}
The Nature Conservancy
Disney Wilderness Preserve
2700 Scrub Jay Trail
Kissimmee, FL 34759
407-935-0002
lprovencher@tnc.org
Site: Carson Valley Project

John Randall^{1,2}
The Nature Conservancy
Wildland Invasive Species Program
124 Robbins Hall
Vegetable Crops Department
University of California
Davis, CA 95616
530-754-8890
jrandall@tnc.org

Rich Reiner¹
The Nature Conservancy
958 Washington St
Red Bluff, CA 96080
530-527-0494
rreiner@tnc.org
Site: Lassen Foothills

Lynne Robinson*,¹
The Nature Conservancy
Resource Development
4245 N. Fairfax Dr. Suite 100
Arlington, VA 22203-1606
703-841-8136
lrobinson@tnc.org

Bruce Runnels^{1,2}

The Nature Conservancy
Rocky Mountain Division Office
117 East Mountain Avenue #201
Ft. Collins, CO 80524
970-484-2886
brunnels@tnc.org

Peter Russell²

The Nature Conservancy
PO Box 1603
Silver City, NM 88062-1603
(505) 538-9700
prussell@tnc.org
Site: Headwaters Ranch

Alan Sands^{1,2}

The Nature Conservancy
1109 Main Street #333
Boise, ID 83702
208-343-8826
asands@tnc.org
Site: Owyhee Canyonlands & Pioneer Mountains

Jen Shimmienti²

The Nature Conservancy
4245 North Fairfax Drive
Arlington, VA 22203
703-841-7190
jschimmienti@tnc.org

Terri Schulz^{1,2}

The Nature Conservancy
1881 Ninth Street
Boulder, CO 80302
303-444-2985 X1206
tschulz@tnc.org
Site: Colorado Science & Great Sand Dunes
Ecosystem

Phil Shephard²

The Nature Conservancy
PO Box 386
Enterprise, OR 97828
541-541-3458
pshephard@tnc.org
Site: Zumwalt Prairie

Ayn Shlisky^{1,2}

The Nature Conservancy
Global Fire Initiative
2424 Spruce Street
Boulder, CO 80302
303-444-2985 ext. 1063
ashlisky@tnc.org

Edward Bennett Smith^{1,2}

The Nature Conservancy
Northern Arizona Field Office
2601 N Fort Valley Road Suite 1
Flagstaff, AZ 86001
520-774-8892
ebsmith@flagstaff.az.us
Site: White Mountains & Verde River
& Coconino Plateau

Andrew Soles²

The Nature Conservancy
Compatible Ventures Group
4245 North Fairfax Drive

Arlington, VA 22203

703-841-4503

asoles@tnc.org

Robert Taylor²

The Nature Conservancy
White Sands Missile Range, NM 88002-5048
505-678-0949
taylorr@wsmr.army.mil

Bob Unnasch^{1,2}

The Nature Conservancy
Ecological Monitoring & Adaptive Management
1109 Main Street #333
Boise, ID 83702
208-343-8826 ext. 14
bunnasch@tnc.org

Chuck Warner¹

The Nature Conservancy
610 N Mission Suite B-1
Wenatchee, WA 98801
509-665-9920
cwarner@tnc.org
Site: Moses Coulee & Beezley Hills Project

Peter Warren^{1,2}

The Nature Conservancy
1510 E. Fort Lowell
Tucson, AZ 85719
520-622-3861
pwarren@tnc.org
Site: Malpai Borderlands

Tim Whittier^{1,2}

The Nature Conservancy
Ecological Monitoring & Adaptive Management
1109 Main Street #333
Boise, ID 83702
208-343-8826 ext. 11
twhittier@tnc.org

Berta Youtie^{1,2}

The Nature Conservancy
PO Box 1188
LaGrande, OR 97850
541-962-7966
byoutie@tnc.org
Site: Boardman Conservation Area
& Juniper Hills

APPENDIX B

Draft Conservation Strategies for Focal Landscapes

<p><u>Owyhee Canyonlands</u></p> <p>45 Ranch (~70,000 acres)</p> <ul style="list-style-type: none"> • Offer as grassbank • Special designation: “Sage Grouse Research Area” • Improve grazing management/non-use • Participate in/start up Weed Management Area <p>Owyhee Borderlands Trust (~150,000 – 300,000 acres)</p> <ul style="list-style-type: none"> • Jointly own/operate grassbanks • Vegetation treatments: prescribed fire, grazing management • Easement purchase and grant program <p>Owyhee Initiative (~5 million acres)</p> <ul style="list-style-type: none"> • Funding for grassbanks • Funding for prescribed fire program • Establishment of Weed Management Areas • Resolution of Wilderness Study Areas • Special designations: <ul style="list-style-type: none"> – Wild and Scenic – Sage Grouse Conservation Area 	<p><u>Headwaters Ranch</u></p> <p>Upland Strategies</p> <ul style="list-style-type: none"> • Implement new grazing system: Rest-rotation, riparian exclusion, reduction in stocking rate, increase movement • Develop an ecological fire management program • Thin (cut, lop & scatter) juniper and pine in pre-threshold areas; treat cut junipers with herbicide? • Construct check dams in areas with high soil erosion potential and little ground cover <p>Strategies for all Systems</p> <p><i>Abate direct threats to river & its floodplain:</i></p> <ul style="list-style-type: none"> • Minimize grazing of livestock in riparian areas • Remove or modify levees • Improve management of irrigation system • Support compatible economic development (organic farms) <p><i>Improve understanding of target systems:</i></p> <ul style="list-style-type: none"> • Sponsor ecological and hydrological research and disseminate results • Raise awareness of sites’ values and of roles of fire and flooding via a public education program
<p><u>Zumwalt Prairie</u></p> <p>General Strategies</p> <ul style="list-style-type: none"> • Collect long-term data on the effects of livestock grazing on target species • Form Advisory Board • Salmon Plan Participation <p>Draft Grazing Strategies</p> <ul style="list-style-type: none"> • Form Zumwalt-wide grassbank with TNC lands as initial core • Prescribed fire? • Leverage TNC property to allow for rest, management agreements, or grazing cooperative? • Form Prairie Farm Rehabilitation Administration-style private grazing cooperative • Operate a network of community pastures on rangeland and marginal farmlands in Manitoba, Saskatchewan and Alberta • Participate in developing stewardship standard for Oregon County Beef and/or Oregon Trail Beef 	<p><u>Great Sand Dunes Ecosystem</u></p> <ul style="list-style-type: none"> • RGDSS used to make water decisions • Irrigation management plan • Eliminate Baca water threat • Limit water diversions over Medano Pass • Integrated invasive species management plan • Understand and manage recharge areas to benefit biodiversity • Reduce impacts of closed basin infrastructure